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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,163	09/12/2003	Sung-Fei Wang	10230-US-PA	2162
31561	7590	07/13/2005	EXAMINER	
JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE 7 FLOOR-1, NO. 100 ROOSEVELT ROAD, SECTION 2 TAIPEI, 100 TAIWAN			WILLIAMS, ALEXANDER O	
			ART UNIT	PAPER NUMBER
			2826	
DATE MAILED: 07/13/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/605,163	<b>Applicant(s)</b> WANG, SUNG-FEI	
	<b>Examiner</b> Alexander O. Williams	<b>Art Unit</b> 2826	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-23,25 and 26 is/are pending in the application.
- 4a) Of the above claim(s) 9-17 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,2,4-8 and 26 is/are allowed.
- 6) ☒ Claim(s) 18-23 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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Serial Number: 10/605163 Attorney's Docket #: 10230-US-PA

Filing Date: 9/13/2003; claimed foreign priority to 2/26/2003

Applicant: Wang

Examiner: Alexander Williams

Applicant's RCE/Amendment filed 6/29/05 to the election with traverse of Species I (claims 1-8 and 18-25) filed 7/2/04 is acknowledged. Applicant's has added claim 26 to this species also.

This application contains claims 9-17 drawn to an invention non-elected with traverse. A complete response to the final rejection must include cancellation of non-elected claims or other appropriate action (see 37 CFR § 1.144 & MPEP § 821.01).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18 to 24 are rejected under 35 U.S.C. § 102(e) as being anticipated by Her et al. (U.S. Patent # 6,650,009 B2).

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18. Her et al. (figures 1 to 6) specifically figures 3a and 3b show a multi-chip structure having a chip loaded with at least one other chip and at least one heat spreader, comprising: a first chip **306** having an active surface; at least one second chip **308** disposed on the active surface of the first chip; and at least one heat spreader **320a,320b** disposed on the active surface of the first chip.

19. The multi-chip structure of claim 18, Her et al. further comprising a plurality of bumps **320a** for bonding the second chip to the active surface of the first chip.

20. The multi-chip structure of claim 19, Her et al. further comprising a filling material **314** between the first chip and the second chip encapsulating the bumps.

21. The multi-chip structure of claim 18, Her et al. further comprising a plurality of bumps **320a,320b** for bonding the heat spreader to the active surface of the first chip.

22. The multi-chip structure of claim 21, Her et al. further comprising a filling material **314** between the first chip and the heat spreader encapsulating the bumps.

23. The multi-chip structure of claim 18, Her et al. further comprising a thermally conductive adhesive **304** for bonding the heat spreader to the active surface of the first chip.

24. The multi-chip structure of claim 18, Her et al. show wherein the heat spreader comprises silicon.

[0033] Subsequently, the front surface of the substrate 302, the spacers 320a and 320b, the first chip 306, the second chip 308, and the third chip 309 are encapsulated with a mold compound 314. The glue layers 304 can be also contained therein. The mold compound 314 includes insulating materials, such as epoxy resin. Finally, solder balls can be mounted on the back surface 303 of the substrate 302 to provide the performance of Input/Output. The spacers 320a and 320b include silicon having good heat dissipation, dummy chip, or other metals having coefficient of thermal expansion(CTE) similar or nearly equivalent to that of the first chip 306, the second chip 308 and the third chip 309, such that the problems with regard to thermal stress would not be generated.

Claim 25 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Her et al. (U.S. Patent # 6,650,009 B2) in view of Osedo (Japan Patent # 3-187227A).

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Her et al. show the features of the claimed invention as detailed above, but fail to explicitly show the heat spreader comprises a chip without signal transmission functions, wherein the heat spreader is plated with gold.

Osedo is cited for showing a semiconductor device. Specifically, Osedo (figures 1 to 3) disclosing Au plating, solder or conductive adhesive 6 is applied to the bonding surfaces of the metal chips 5 which are bonded to the electrode 3 of the semiconductor chip 1 and the metal chip 5 is bonded to the electrode 3 of the semiconductor chip 1 with it and further, as Au plating, solder or conductive adhesive 6 is applied to the bonded metal chip 5, the metal chip 5 can be bonded to the metal wiring of a package for the purpose of having highly accurate bonding between a semiconductor device and a package side.

25. The MCM package of claim 1 or 18, the combination with Osedo showing wherein the heat spreader is plated with gold.

Therefore, it would have been obvious to one of ordinary skill in the art to use Osedo's gold plated heat sink chip to modify Her et al.'s dump chip for the purpose of having highly accurate bonding between a semiconductor device and a package side.

Claims 1, 2, 4-8 and 26 are allowed.

## Response

Applicant's arguments filed 6/29/05 have been fully considered, but are moot in view of the new grounds of rejections detailed above.

The listed references are cited as of interest to this application, but not applied at this time.

Field of Search	Date
U.S. Class and subclass: 257/777,786,734,737,738,723,686,685,678,673,680,774, 784 361/707	8/25/04 7/11/05
Other Documentation: foreign patents and literature in 257/777,786,734,737,738,723,686,685,678,673,680,774,	8/25/04 7/11/05

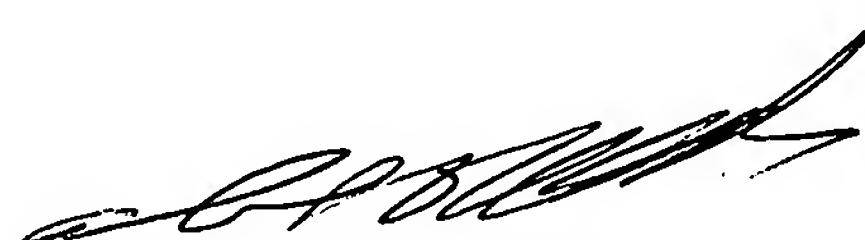
784 361/707	
Electronic data base(s): U.S. Patents EAST	8/25/04 7/11/05

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander O Williams whose telephone number is (571) 272 1924. The examiner can normally be reached on M-F 6:30-7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272 1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AOW  
7/11/05



Primary Patent Examiner  
Alexander O. Williams